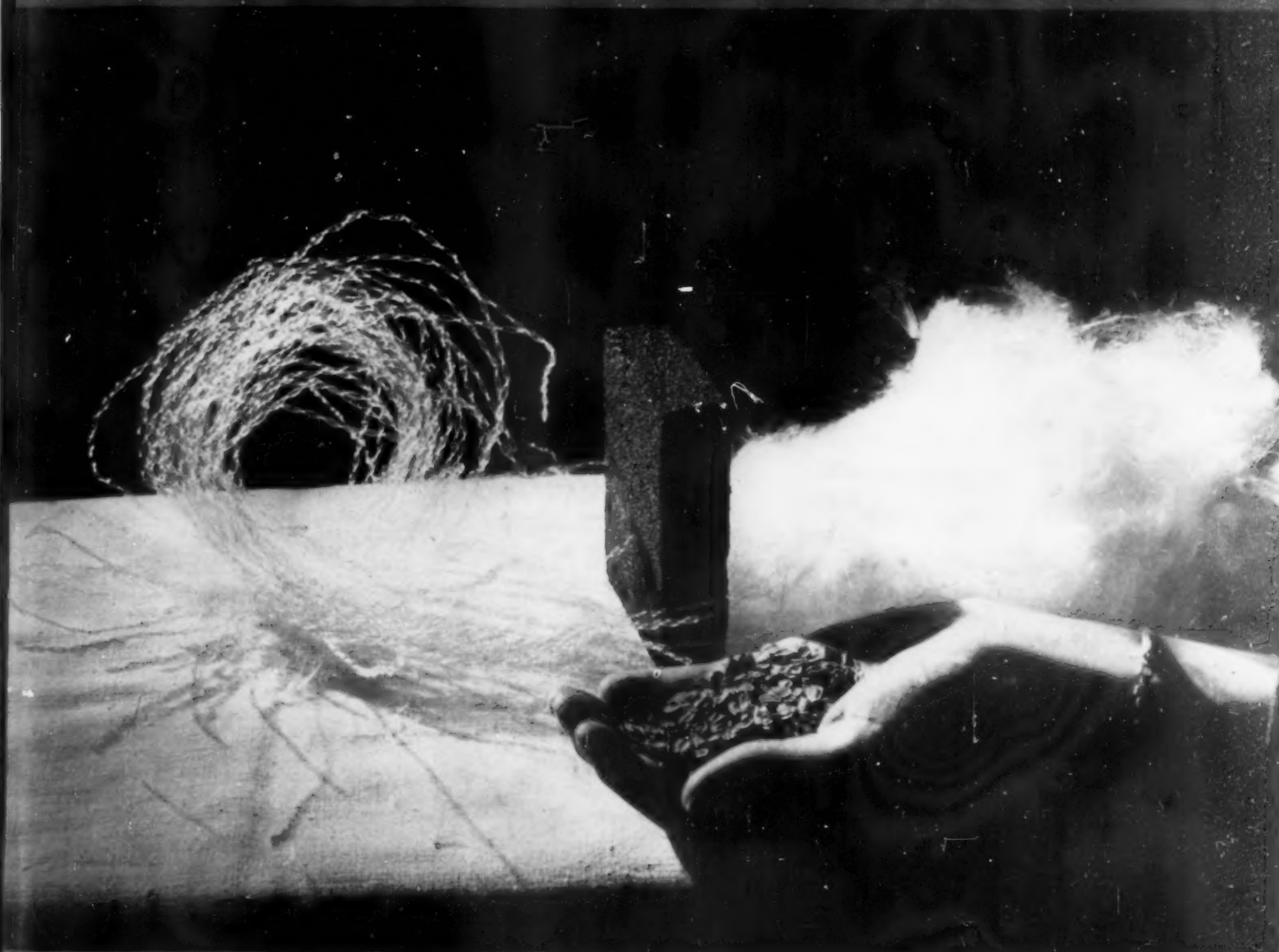


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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • FEBRUARY 20, 1943



To Keep 'Em Floating

See Page 122

A SCIENCE SERVICE PUBLICATION

Do You Know?

Rhubarb was used first as a medicine.

Brazil expects to produce 40,000 tons of *rubber* by the end of 1943 or early in 1944.

The "*English*" *walnut* originated in Persia and is America's principal tree nut producer.

Since many *insects* are attracted by the scent of nitrobenzine, it is frequently used as a bait for traps.

There are now 12 *flax mills* in Oregon, the most important fiber-flax state, an increase of eight in four years.

Nearly 900,000 tons of *sugar* were imported from Puerto Rico in 1942, an increase of 2,880 tons over 1941.

A synthetic rubber-coated shaft with magnetized metal bushings is used as a rotor in the fuel line to indicate the amount of *gas* being consumed by airplanes in flight.

Over 500,000 *scientists* and professional men and women are now catalogued by the government and more than 140,000 have been certified to agencies engaged in war work.

Soy bean plants from one acre may produce up to 200 pounds of "*soy wool*", fibers made from the bean after the oil has been extracted, which may be used in fabrics instead of wool from sheep.

Question Box

Page numbers of Questions discussed in this issue:

BOTANY

What gives coffee its wide appeal? p. 119.
Why was sugarcane pollen flown to Colombia? p. 120.

CHEMISTRY

How is chlorine made as a potash by-product? p. 120.

ENGINEERING

How is an electric weld's strength determined? p. 118.
How is industry eradicating the dust menace? p. 117.
What are the advantages of plastic for boat propeller shaft bearings? p. 120.
Why are captured British, American-made trucks being used by the Germans? p. 117.

GENERAL SCIENCE

How many honorable mentions were awarded in the Science Talent Search? p. 127.

GEOGRAPHY—METEOROLOGY

What sort of weather do they have in Tunisia? p. 125.

INVENTION

How can holes be shot at airplanes? p. 120.
Why is it an advantage to have a life preserver packed as a knapsack? p. 121.

MEDICINE

What can be substituted for plasma or whole blood transfusion in some cases of shock? p. 118.

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

What is the cause and remedy for "shipyard eye"? p. 115.

METEOROLOGY

How may color charts aid the flyer? p. 120.

PHYSICS

What sort of extension of the technical training program has been recommended? p. 125.

PLANT PATHOLOGY

What has made spinach sick? p. 120.

PLANT PHYSIOLOGY

Why should the blossoming of tung trees be delayed? p. 121.

PUBLIC HEALTH

What disease may be a post-war plague? p. 117.

RESOURCES

From what part of the world is rubber being flown to this country? p. 116.
Of what materials can a ration-free shoe be made? p. 115.

TECHNOLOGY

What materials can now be used in place of cork to keep men afloat? p. 122.

WILDLIFE

How will the Army make use of reindeer? p. 124.

ZOOLOGY

What rodents share with songbirds the credit for destroying insects? p. 119.

Antimony, an important war metal used in hardening lead and other soft metals, is now obtainable only from South America.

Vision through *window screens* made of plastic wires is better than through the ordinary screen because the plastic wires are transparent.

Manganese ore running from 34% to 40% manganese is now being mined in western North Carolina and taken to Richmond, Va., for smelting.

Though *intelligence* in man is not related to the size of the brain, bright rats have brains larger than the average, and 25% more than the stupid ones.

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MEDICINE

"Shipyard Eye" Research

Virus believed cause of highly contagious disease. Sulfa drug is called almost specific remedy. Several research studies conducted.

► THE LATEST developments in the "shipyard eye" situation are:

1. The cause of the disease, which has been striking in epidemic form at industrial as well as shipyard workers on the East and West Coasts, has been fairly clearly identified as a virus through studies by two groups of medical researchers.

2. Sulfathiazole has been reported as an "almost specific" remedy.

3. Doctors, nurses and first aiders in Detroit, and probably other industrial areas, have been warned to be on guard, taking extra precautions against getting the disease themselves or spreading it to others when treating patients having or suspected of having the disease. In Detroit the Board of Health is requiring that all cases be reported to it.

In 125 cases studied at the University

of California Medical School in San Francisco, undernourishment, occupation and disease germs of the bacteria, that is, non-virus type, were ruled out as possible causes, Dr. Michael J. Hogan and Dr. Joseph W. Crawford report.

A filterable virus has actually been isolated from patients having the disease by Dr. Murray Sanders and Dr. R. C. Alexander, of Columbia University, in New York. Their studies were carried on in "informal collaboration with the Commission on Neurotropic Virus Diseases, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the United States Army".

The virus they isolated caused "shipyard eye" when rubbed in the eye of a healthy young man who volunteered for the test. Blood from convalescent pa-

tients in New York and California neutralized this virus. The virus was shown to be different from other disease viruses by further neutralization tests and by difference in size as measured by the bore of the filter through which it could pass. These studies by the New York investigators were reported in the *Journal of Experimental Medicine* (Jan.).

Successful use of a 4% or 5% solution of sodium sulfathiazole sesquihydrate in treating cases of "shipyard eye" at the County Hospital in San Diego, Calif., was reported by Dr. F. J. Walter to the *Journal of the American Medical Association*. If further trial shows that this is, as Dr. Walter calls it, "almost specific" as a remedy for the condition, it will be one of the few instances in which a sulfa drug has succeeded as a remedy for a virus-caused condition.

"Shipyard eye", known medically as kerato-conjunctivitis, is highly contagious, according to a report from the Wayne County, Mich., Medical Society. About 5 out of every 100 exposed persons develop the disease. In spite of its popular name and its outbreaks among industrial workers, the highest infection rate in a recent epidemic was among the doctors and nurses in the affected industry.

Science News Letter, February 20, 1943

RESOURCES

Shoe Rationing Encourages Use of Leather Substitutes

► LEATHER-LESS shoes may soon be on the market as one of the results of the new shoe-rationing order. A laminated duck fabric with a plastic binder has already been developed for outer soles and is testing out quite satisfactorily. A composition mid-sole is in more or less general use. A plastic inner sole is a reasonable possibility. Cloth uppers have long been used, and a new woven plastic gives promises.

Put the laminated fabric outsole, the composition mid-sole, the plastic inner-sole, and the woven upper together and you will have a leather-less shoe which will probably be ration-free.

Manufacturers are particularly concerned with a satisfactory outer-sole substitute, as the principal shortage seems to be in sole leather. A semi-flexible plywood is being tried. A shoe with an inch-thick hinged wood sole is understood to be now offered to farmers and other workmen. The hinge is under the ball of the foot so that the wearer may walk naturally.

To many men, three pairs of shoes



ARCTIC HOME—This portable shelter has been developed for use by Army Corps personnel in cold climates. Blankets of glass fiber insulation in walls and floor save more than 20,000 pounds in the weight of fuel needed to maintain a comfortable living temperature during the heating season. The shelters are lightweight and compact for transportation by plane.

a year seems like an ample allowance. It probably would be if they were made of a good quality of leather. But practically all the best leather is now going into footwear for the Army and the Navy. Civilians must be satisfied with shoes made from leather of poorer grades.

Better care of boots and shoes will be helpful, under the new shoe-rationing order. Shoes, like automobile tires, will wear longer if given good care. They should be kept well oiled and polished.

They should not be dried out near a radiator or stove. They should be taken to the repairman as soon as the slightest repairs are needed.

The shoe shortage can be helped also if everybody will dig into their closets and get out all those old shoes which may be put into walking condition again through repair. Less manpower is needed to repair old shoes than to make new ones even if made without leather.

Science News Letter, February 20, 1943

RESOURCES

Rubber Flown Here

Returning from bases in the Central American Tropics, Army planes are carrying crude to help ease the present shortage.

➤ ARMY PLANES returning from bases deep in the Central American tropics are loading extra nooks and crannies with crude rubber to help ease the shortage.

More than a hundred tons have been flown to the United States during the past three months. At least half came

from the Republic of Panama, while most of the remainder was picked up in the Canal Zone and Nicaragua, with a few tons from Guatemala.

Continually increasing tonnage makes rubber one of the principal airborne cargoes from our Central American neighbors.

Shipments from the Canal Zone so far have been seized enemy rubber now put to work to help defeat the Axis. The remainder of the supply flown in is a new kind of scrap rubber obtained from wild *Castilloa* trees. Tree scrap is the hardened milky juice that collects at the base of the *Castilloa* tree after tapping it in herringbone fashion, a lower grade than the smoke-cured sheets of *Castilloa* prepared from more carefully collected latex.

Scrap from the *Castilloa* trees is gathered by natives throughout the region, then lugged to the airfields where it brings the basic Rubber Reserve Company price of 33 cents a pound. Packed in hundred-pound bags, the rubber is loaded into available space on planes flying northward and dropped later at San Antonio, Texas. A plane may load as much as 4,000 pounds.

In Guatemala and Yucatan, planes formerly used to bring chicle for chewing gum from inaccessible forest regions to river ports are now transporting *Castilloa* rubber as well.

Other planes throughout the vast Amazon River basin area are flying out crude rubber from another source, the wild *Hevea* trees, to speed the rubber program initiated since the wartime loss of Far Eastern rubber sources.

Although these shipments are only a very small fraction of our needs, they are harbingers of a vast development of Central American rubber production now under way. It is expected to yield long-range benefits as well as furnish an immediate supplementary source of this strategic material.

Science News Letter, February 20, 1943



RUBBER CARGO—At an airbase in Nicaragua, sacks of crude rubber from *Castilloa* trees are loaded into a U. S. Army plane. An increasing quantity of this strategic material is being flown from Central America by planes returning "light" from Latin American missions.

INVENTION

New Carrier for Wounded Is Like Papoose Case

➤ QUICKER and safer handling for wounded and sick men being transferred from shore to ship or otherwise handled in transit is promised under patent 2,309,464, issued on a contrivance that looks somewhat like an oversized papoose case. It is the invention of J. P. Lucci and F. M. Reed of Wooster, Ohio.

The patient is first securely wrapped and strapped in warm inner blankets, and then enclosed (except for his face and neck) in an outer case of long wooden slats riveted to straps. Side loops permit carriage like a stretcher, and a ring back of the patient's head provides for hooking onto a derrick, boat davit or other hoisting gear.

Science News Letter, February 20, 1943

ENGINEERING

Filters Rout Dust Enemy

Many devices used to sift dirt from air of war plants. Could cause havoc in explosives factory or lower quality of military equipment. Protects health.

► FILTERED AIR is proving industry's answer to the problem of how to control our tireless enemy, dust, which could slow the output of war materials and impair their quality. Electrostatic filters that draw dust particles from the air, much as a magnet draws iron filings, are used in plants manufacturing bomb sights, and in naval air stations where the sights are overhauled and repaired. They clean the air in laboratories where vital war research is being carried on.

Allowed to carry on their destructive work unchecked, tiny particles of dust could ruin the accuracy of our gun and bomb sights; shorten the life of engines and motors of ships, tanks and planes; cause catastrophic explosions in ordnance plants; seriously impair the efficiency of our vital communications system. No organization of human fifth columnists could do a more complete wrecking job.

Among the largest installations of air filters—but of a different type—are those in the paint spray enclosures of two huge bomber assembly plants in the Southwest. All the air that enters the paint-spray buildings passes through mats composed of glass fibers coated with a dust-catching adhesive. In each of the buildings 3,648 filters are employed to strain the dust out of the air.

In ordnance plants, similar glass fiber

filters are employed to collect from the air particles of TNT and other explosive dusts created by the manufacturing operations. If allowed to accumulate on the walls, floors or machines, the particles would eventually create a hazard that could result in great loss of life and wreckage of the plants.

Most of the nation's automatic telephone exchanges, vital to war communications, depend on glass fiber air filters to clean the air. The efficient operation of the exchanges is contingent upon the establishment of close contacts between small metal parts. If dust accumulates on these parts it acts as an insulator, and can either cause complete failure to operate, an epidemic of wrong numbers, or static that interferes with conversation.

In scores of plants, glass fiber filters are employed to collect dusts created by grinding processes, eliminating a hazard to the health of workers in the plant.

Planes, tanks, trucks and other military equipment are being equipped with glass fiber air filters to prevent the admission of abrasive dusts.

If dust enters the carburetor of an internal combustion engine during operation, it works its way into the lubrication system where it acts as an abrasive to shorten the life of the motor.

Science News Letter, February 20, 1943

well as military vehicles. Ability to put power against the ground with "all fours" enables our trucks to pull out of holes, or over humps, that would stall machines with rear-wheel drive only.

All-wheel drive is not a new thing, Col. Campbell points out. Four-wheel-drive trucks were in use during the first World War; but they had a number of faults that prevented their full success. These have since been overcome, and the modern all-wheel-drive truck is now standard.

Col. Campbell describes a conversion kit which was used commercially to turn rear-wheel-drive Ford trucks into four-wheelers. This was pioneered about eight years ago, and was so much of a success, especially in Western oil and timber regions, that when the present war emergency began to develop, the auto engineers had the "know-how" that presently gave birth to the unstoppable jeeps and peeps of today's armies.

Science News Letter, February 20, 1943

PUBLIC HEALTH

Tuberculosis May Prove Post-War Plague

► TUBERCULOSIS will become a plague affecting approximately 10,000,000 persons in Europe after the war, Dr. Robert E. Plunkett, general superintendent of tuberculosis hospitals for the New York State Department of Health, predicts in a report to the Bulletin of the National Tuberculosis Association.

A three-point program by which the United States could help check this anticipated plague was outlined by Dr. Plunkett as follows:

1. Governmental and private agencies dealing with tuberculosis in this country can appraise the problem and develop the control program, for which public or private funds or both could be used.

2. Many American physicians and X-ray technicians who are gaining tuberculosis experience and training with the armed forces during the war could be available for post-war service abroad, since not all of them could find work in the anti-tuberculosis fight here.

3. Some of the vast amount of X-ray equipment acquired by the armed forces for chest X-raying of men entering the services could be assigned or contributed to foreign service since not all of it will be needed at home after the war.

Tuberculosis is "the delayed action bomb of the diseases of war," Dr. Plunkett said in urging control plans.

Science News Letter, February 20, 1943

ENGINEERING

Nazis Like U. S. Trucks

► THE GERMAN high command in North Africa has bestowed the highest possible compliment on American-made trucks, it has been disclosed (*Military Engineer*, Feb.). A bulletin found on a captured Nazi officer in Libya gave orders that captured British trucks were to be used for all reconnaissance work in the desert instead of German or Italian trucks, because "the German trucks stick in the sand too often." The writer, Lt. Col. C. Alfred Campbell, adds: "Most of the 'British' trucks operating in Libya are of American origin."

German and Italian truck manufac-

turers, Col. Campbell states, tend to build big units with powerful engines, trusting to sheer horsepower to bull their way through. This of course gets them into difficulties whenever the going gets soft; they are no more adapted to work in sandy terrain than elephants are.

Light and medium American-built trucks, on the other hand, take to sandy country like the Arabs' own camels. They don't try to buck their way through the sand—they go over it.

A major factor in the American trucks' success in the desert is the all-wheel drive, now common on commercial as

MEDICINE

Protein Combats Shock

Solution of proteins may possibly prove to be a substitute for blood plasma in treating hemorrhage from war wounds.

► A POSSIBLE substitute or supplement for blood plasma in treating shock from hemorrhage in war wounds in case of shortages of plasma is announced by Dr. Robert Elman and Dr. Carl E. Lischer, of Washington University School of Medicine and Barnes Hospital, St. Louis (*Journal, American Medical Association*, Feb. 13).

The substitute would be a solution of hydrolyzed proteins, enzymatically digested, from either beef blood plasma or casein, the chief protein of milk. In laboratory experiments such solutions showed themselves as good as blood plasma for treatment of animals in shock from repeated hemorrhage.

The animals that got the protein solutions survived for a 50% longer time and could withstand 25% greater blood loss than untreated animals, and their blood pressures also stayed at higher levels.

Solutions made from pure crystals of all the essential amino acids also were definitely beneficial but not as markedly

as the solutions of hydrolyzed proteins.

Caution is needed before the encouraging results of these experiments can be applied to treatment of human patients suffering surgical shock from hemorrhage, the scientists warn. They believe further study is justified because of the practical advantages such solutions offer.

While plasma and whole blood are "of vast importance in the treatment of shock," they point out, "it is probable that in wartime the number requiring such treatment might well exceed the available supplies of plasma and that in the armed forces many situations might arise in which blood donors were not available."

The injection of one quart of plasma requires bleeding four donors and considerable processing, not to mention the transport and storage space problems. Solutions of amino acids and hydrolyzed proteins, on the other hand, are as convenient to give, the scientists state, as sugar and salt solutions.

Science News Letter, February 20, 1943

ENGINEERING

Electricity Sews Metal

► STITCHING METAL? Why not? Airplanes and railroad cars and all sorts of things are being made that way out of stainless steel—even masts for ships.

Sewing is done with an electric thread but no needle pierces the metal. Instead, two pencil-like electrodes clamp the steel sheets between them. Suddenly a young lightning bolt is shot across them—clean through the metal. It all happens in a very small part of a second.

In that flash of time some of the metal in the path of the current comes to fusion heat. It so happens that the greatest heat is generated just where the sheets are faced together, and a little spot of one sheet becomes fused to another little spot of the other. Both sheets are then joined together by a stainless steel connection. In stainless steel it is a strong connection—much stronger than would be a rivet of the same size.

But the connection can't be seen. It is between the inside surfaces of the sheets. "How do we know they are joined, and how strongly?" This is answered by a simple little device called the recorder. This instrument actually measures the amount of current used—even if for so brief a flash—and also the time during which the current is applied. Both readings tell the exact amount of electric heat used, and the amount of the heat in turn tells how much metal has been brought to fusion—hence the size of the weld.

The value of each weld is also recorded on a piece of tape by the recorder. If any one weld fails to come up to specifications, a bell rings and shuts off the welding machine. The bell is sometimes known in the shop as the "raspberry". You can well imagine that the welder does not like to have the "raspberry" loudly advertising his failure.



SEWING STEEL—Electric stitches are being made in this stainless steel structure by fusing sheets of metal together wherever the worker applies the electrodes. Resulting connections are much stronger than would be rivets of the same size.

Many women have been trained and employed by the Budd Company to do this new kind of stitching in the fabrication of airplane parts and structures.

Science News Letter, February 20, 1943

ENGINEERING

Rockets Help Heavily Loaded Planes Take Off

► POWERFUL rocket jet motors may be used soon as auxiliary power to assist heavily loaded bombers and cargo planes in the take-off. Cargo carried by a plane is limited to the weight with which it can get off the ground. Auxiliary assistance to help get it into the air would permit it to transport a much heavier load than is now possible.

Auxiliary power during the take-off has been often suggested and various sources of power have been tried. There is nothing new in the idea. The Wright brothers used a land catapult at Kitty Hawk. So far as is known, rocket power has not been used in America, but it is

reported that it is being used with success in Germany.

The possible use of rocket power is discussed by Roy Healy, president of the American Rocket Society (*Aviation*, Jan.). He and his organization have carried out tests with rockets as a propelling power. He is of the opinion that a battery of powerful powder rocket charges attached to the belly of the fuselage, and exploded by electric ignition in consecutive order during the run-off, would accelerate the speed sufficiently to permit an overload of as much as 3,000 pounds.

A simple rocket power motor has been designed weighing less than 25 pounds which uses liquid oxygen and an oil fuel. Ignition is by electric spark. The motor will give a 1,000 pound thrust, declares Mr. Healy. It produces a jet velocity of discharge of over 6,500 feet per second.

Twenty such motors, discharging in pairs at intervals of one second, would give a constant thrust of 2,000 pounds to the plane for 10 seconds during the take-off.

Science News Letter, February 20, 1943

BOTANY

Coffee Is Ancient Drink

Caffein beverages have appealed to people in widely separated regions since prehistoric times. Shortage can be damaging to morale of public.

► COFFEE and other caffein-containing beverages are not the discoveries of modern, civilized men at all. These drinks with a harmless "kick" in them have been made and used since prehistoric times by primitive peoples fortunate enough to have caffein-yielding plants growing in their neighborhood.

The importance of the caffein beverages was discussed by Prof. P. C. Mangelsdorf of Harvard University, in the course of a lecture on economic plants as weapons of war, given before the American Academy of Arts and Sciences.

"These caffein beverages, although of no nutritional value, have become so important, especially coffee to Americans and tea to the British, that they are regarded as essential to the maintenance of morale," Prof. Mangelsdorf stated. "Military needs take precedence over civilian desires and rationing is a necessary consequence. A plant product which was once a luxury has become a necessity and a factor in the winning of the war."

Besides familiar coffee and tea, the list of caffein-yielding plants used by various peoples includes the yaupon or cassine of our own Southeast and the yerba maté of South America. Both of these are smoot-leaved species of holly. Then there are guarana, made from the fruit of a tropical shrub, and yoco, prepared from the bark of a tropical vine. Cocoa also contains caffein, though its most characteristic stimulant is the related compound, theobromin.

If the lack of coffee and tea can be

damaging to morale, lack of other plant products can have even more devastating material results, the speaker pointed out. Germany, in desperate need for edible oils, was after the white oil of sunflowers as well as the black oil that comes out of the earth when her hordes drove into Russia—only now to be driven out of the sunflower fields as well as out of the Caucasian oil fields.

We ourselves have been hard hit by the Japs' seizure of the Philippines, whence we normally obtain the larger part of our coconut oil imports, used in soap as well as for food. We are meeting this lack by growing greatly increased acreages of soybeans and peanuts, both rich in good oils.

Almost too painful to be talked about is our loss of Far Eastern rubber and quinine sources. We have synthetic substitutes for both, but they are not complete substitutes, and we are driving hard to collect wild cinchona in the Andes, wild rubber all the way from the Amazon valley to northern Mexico, to meet our needs for natural plant products.

Science News Letter, February 20, 1943

INVENTION

Coffee Without Caffein Improved by New Process

► COFFEE without caffein, which many have come to like during recent years, can be better and more quickly manufactured by a new process in which organic solvents are eliminated and only hot water is used. The process is de-

scribed in U. S. patent 2,309,092, issued by the Patent Office to N. E. Berry of Summit, N. J., and R. H. Walters of Rutherford, N. J., assignors to Generals Foods Corporation.

The decaffeinating process hitherto in use involved soaking the green coffee beans in trichlorethylene or similar organic solvent, which removes the caffein but leaves the other water-solvent substances on which coffee flavor depends. However, this process required long steaming or soaking, the solvent was hard to get out completely, and it carried off also the coffee's natural wax which then had to be separated from the caffein if the latter were to be recovered.

All these difficulties are obviated in the Berry-Rutherford process, which flows green coffee beans through the apparatus in one direction, against a counter-current of hot water to which has already been added all it will hold of the water-soluble flavoring substances, lacking only caffein. The result is that the caffein comes out of the beans, while the other substances remain in them. After drying, the decaffeinated beans are processed in the usual way.

Science News Letter, February 20, 1943

ZOOLOGY

Wild Mice Share in Credit For Destroying Insects

► WILD MICE are entitled to a share in the credit for destroying insects that has become almost a monopoly of songbirds, according to Dr. Albert R. Shadle of the University of Buffalo. Other small rodents, like chipmunks, ground squirrels, also figure as insect destroyers.

Insect-eating habits of these small rodents were studied at the Allegany School of Natural History, where one family of deer-mice were permitted to keep for five years a home they had made in a desk drawer.

They made a specialty of moths. Frequently a deer-mouse could be seen dashing across a screen to catch moths attracted by the lights within. Captured deer-mice in a cage quickly learned to accept moths from the hands of their captors. They liked caterpillars, too.

Dr. Shadle points out that small rodents, hunting among small branches, and the undersides of tree limbs, are likely to find many inactive moths that are overlooked by most birds, besides quantities of insects in the larval and pupal stages.

Science News Letter, February 20, 1943

BOTANY

Sugarcane Pollen Flown To Colombia for Tests

► A GOOD turn for a good neighbor, shipped well-chilled by airplane, has already resulted in the production of some thousands of promising hybrid sugarcane seedlings, and at the same time demonstrated the practicability of keeping at least some kinds of plant pollen as much as a week before using for flower fertilization.

Dr. George B. Sartoris, U. S. Department of Agriculture botanist, found in repeated experiments that he could keep pollens of sugarcane and corn in viable condition for from four to seven days, if he held the temperature down to about 40 degrees Fahrenheit. Thorough drying of the air in the container was also found to be an advantage in handling.

Pollens shipped in this way from the United States to Colombia by airplane arrived in three days after packing, and were used on the morning of the fourth day. The hybrid offspring are reported as thriving.

Science News Letter, February 20, 1943

CHEMISTRY

Versatile Chlorine Made As Potash Byproduct

► CHLORINE, the element of a thousand uses in war and peace, can be made as a byproduct of the potash industry, through a process patented by a Bureau of Plant Industry chemist, Donald L. Reed. Mr. Reed has assigned rights in his patent, no. 2,309,919, royalty-free to the U. S. Department of Agriculture.

When potassium chloride, one of the most common potash minerals, is treated with nitric acid to make potassium nitrate, one of the byproducts is a gas known as nitrosyl chloride, represented by the formula NOCl . Also given off are hydrogen chloride (HCl) nitrogen peroxide (NO_2) and water vapor.

This mixture has been proposed as a source of chlorine, but previous processes have involved the use of too much energy. Mr. Reed gets around this difficulty through the use of one of those handy chemical go-betweens, a catalyst. Finely divided silica, in one of several known forms, is first heated to 400 degrees Centigrade or above, to activate it. After it has cooled, the gas mixture is passed through it at a relatively low temperature—about 40 degrees Centigrade.

Silica has a selective hold on various compounds: most on water, least on chlorine. So the chlorine comes off first, quite pure. After a while, it becomes mixed with some of the other gases. Then the process is stopped, the silica heated again, and the process starts once more.

Science News Letter, February 20, 1943

INVENTION

Shoot Holes at Bullet-Proof Gas Tanks, Says Inventor

► ANOTHER military novelty among recently patented inventions is an effort to render bullet-proof gasoline tanks ineffectual. As is well known, such tanks have rubber inner walls that close up any holes caused by enemy missiles. Inventor A. J. De Camp of Molina, Colo., undertakes to make permanent holes in such tanks by literally shooting the holes at them. He provides bullets with tubular jackets around a rather loosely fitting core. When such a bullet strikes, the jacket is supposed to be caught in the wall while the core plunges on. Thus a solid, metal-lined hole would be left, with the inflammable gasoline squirting out. The invention is protected by patent 2,309,887.

Science News Letter, February 20, 1943

PLANT PATHOLOGY

Sick Spinach Worries Many Vegetable Growers

► SICK SPINACH, thousands of acres of it, might be a pleasing picture to the traditional rebellious small boy, but it is only a severe financial headache to Arkansas vegetable growers who specialize in producing the leafy crop for markets in the North.

In Crawford County, where spinach growing is a really big-time industry, some 13,000 acres were planted very early last fall, in hopes of getting an extra cutting early in the season. What happened instead was a terrific epidemic of a fungus disease, downy mildew, which took from a third to a half of the first cutting. The too-early planting gave the fungus its chance, reports Dr. Seth Barton Locke of the Arkansas Agricultural Experiment Station.

The epidemic died down by mid-December, but dead leaves around the bases of the plants were found to be carrying an abundance of spores, ready to start mischief again when the weather warms up.

Science News Letter, February 20, 1943

IN SCIENCE

ENGINEERING

Plastic Goes on Sea Duty; Salt Spray "Oils" Bearing

► WELDING layers of fibrous material together with synthetic resins has produced a plastic that is being drafted for sea duty. Plastic propeller-shaft bearings on Uncle Sam's sub chasers and other light war vessels are given longer life and flying salt spray only makes them run more smoothly. Metal bearings are corroded by salt water and the heavy wood sometimes used wears out nine times as fast as the plastic, recent tests show.

"Naval vessels can stay on active duty longer without drydocking for bearing repairs," V. E. Enz, Westinghouse marine engineer, emphasizes.

Developed by Westinghouse, the plastic is also used for gears to prevent sparks in explosive atmospheres and as valve parts formerly made of bronze. Marine engines are "floated" on blocks of the plastic to reduce vibration and noise.

This same plastic, dubbed Micarta, is being used by the Army for helmet liners.

Science News Letter, February 20, 1943

METEOROLOGY

Sky Color Experiments May Be Aid to Aviation

► CERTAIN shades of sky-blue indicate good or bad flying weather to a trained aerologist, and can be reproduced on color charts. But whether this principle could be widely applied to aviation will depend on how closely people can agree in their estimates of color.

To find out, Prof. Hans H. Neu-berger, aerologist at Pennsylvania State College, is asking 1,000 untrained students to tell him what color the sky is. If a large majority can agree on the shade, the usefulness of color estimations would be established as a meteorological tool. A simple color chart of seven shades of sky-blue could be used instead of expensive instruments to carry on further investigations.

Science News Letter, February 20, 1943

CE FIELDS

PLANT PHYSIOLOGY

Chemicals Used to Check Blossoming of Tung Trees

► **TUNG OIL**, one of our serious industrial shortages since the Chinese supply has been cut off, may be increased from our Gulf Coast plantings if means can be found to reduce frost damage. A late frost, catching the developing young flowers, can practically ruin the year's crop.

One method might be to give the buds a chemical treatment to delay their opening past frost-danger time, as is already being done with peaches, apples and other fruit crops in the South. Dr. Harold M. Sell and a group of associates in the U. S. Department of Agriculture, using alpha naphthalene acetic acid and other growth-controlling chemicals, have reported success in preliminary experiments.

Science News Letter, February 20, 1943

PUBLIC HEALTH

Government Inaugurates Employee Health Program

► **A NEW** program for promoting health and reducing absenteeism on account of illness among federal government employees has been inaugurated on an experimental or study basis under the direction of the Surgeon General of the U. S. Public Health Service.

The program has started among employees of the Public Health Service. It consists of a series of how-to-keep-well-meetings arranged so that each employee may attend one each month for six months.

Since this is the first time a government agency has developed a health education program for its employees, the experience gained is expected to serve as a guide for other agencies both in the government and in private industry. Other government agencies may, if they wish, call on the Public Health Service for assistance in similar programs.

The federal health service's meetings will be held during working hours in meeting rooms of the Public Health Service or the National Institute of

Health. They will last one-half hour and an additional ten minutes will be provided for time going and coming.

Nutrition and what food rationing means to the individual is the subject of the first meeting. For the future, subjects for discussion, lectures, and moving pictures will be selected by the employees who are expected to participate in planning the programs to suit their own health education needs and to elect group leaders to take charge of their own how-to-keep-well meetings.

The groups will range in size from 40 to 75 persons, according to available space in meeting rooms. So while each Public Health Service employee will attend one meeting a month, there will be four weekly meetings throughout the six-month period.

Science News Letter, February 20, 1943

BIOLOGY

Glass Wicks Supply Food To Fungi During Tests

► **AMONG** the busiest of Hitler's little helpers in this country are several species of cloth-eating fungi that attack canvas used in Army tents and truck covers, and many other fabrics. To thwart them, various chemical treatments are used; and to measure the effectiveness of these, samples of treated and untreated cloth are fed to them, and afterward subjected to comparative tests.

An improved apparatus for these tests has been developed by Dr. Glenn A. Greathouse and associates, of the U. S. Department of Agriculture. Fiberglass, which is a fabric woven out of glass filaments and hence completely indigestible to fungi, is the key material.

The test chamber consists of a large square bottle with a metal screw cap. The top of the cap is cut out and a piece of the glass cloth is inserted in its place to serve as an air filter. A strip of the fabric to be tested is placed in the bottle and inoculated with a culture of the fungi. A strip of the glass cloth serves as a wick to convey measured quantities of dissolved accessory food substances required by the fungi. This overcomes a previously existing difficulty with other forms of wicking, including the vegetable gelatin, agar-agar, which were subject to attack by the fungi and could therefore falsify the tests. Now the decay-causing organism must feed on the test strips of fabric, or starve.

Science News Letter, February 20, 1943

INVENTION

Knapsack Life Preserver Is Out of the Way

► **SAILORS** are sometimes required to wear life preservers during action, if there appears to be much probability that they will suddenly find themselves in the water. The conventional life preservers, however, are so bulky that the front portions interfere with the work of the men.

To obviate this difficulty a Navy officer, Lieut. Comdr. Lloyd A. Straits, has invented what he calls a knapsack-type life preserver, on which he has received patent 2,307,810. It has only one flotation element, which is to be worn in front when the wearer is in the water—or expects soon to be there. During action on deck, it is carried on his back on a suitable harness, held in place with snap fasteners.

When needed, the wearer simply takes hold of a handle at one side, pulls the float around to the front, and secures it in place with a couple of snap buckles to rings on the other side. In another form, the float is flipped over his head from back to front, instead of being pulled around his side.

Rights in all three of these patents are granted, royalty-free, to the U. S. government.

Science News Letter, February 20, 1943

INVENTION

New Method Improves Armor-Piercing Bullets

► **A NEW** way of making armor-piercing bullets with hard steel cores has been developed by R. I. Southwell of Nichols, Conn., and E. A. Conner of Stratford, Conn.

As currently made, the pointed steel slug used in such a bullet is forced from the rear into the outer jacket made of softer metal. Sometimes the fit is not too good, and the bullet is consequently likely to stray off its proper trajectory. In the new way, the slug is forced base-first into a hollow cup of the jacket metal, and the open end squeezed down to make a point. This presents a base of uniform metal to the action of the powder gases in the gun; also it is easier for the slug to slip out of the jacket when it hits hard armor and has to punch its way through alone.

The inventors have assigned their patent, no. 2,309,360 to the American Chain and Cable Company, of New York.

Science News Letter, February 20, 1943

TECHNOLOGY

Keeping Afloat

Milkweed, glass and plastic used to make new life-saving devices. Promise to be more satisfactory than war-scarce materials which they replace.

By DR. FRANK THONE

► **KEEPING AFLOAT**, these stormy days, has become a problem. Not just in the figurative sense, but literally afloat, in actual water. Life preservers, rescue floats, life rafts and other kinds of floating gear must be produced in much greater volume now than ever before. At the same time there are war-caused shortages in the long-accepted standard materials, notably cork, kapok fiber and balsa wood.

Substitutes shown on the cover of this week's *SCIENCE NEWS LETTER* promise to prove more satisfactory than the originals. For some uses at least, there is every likelihood of their keeping their war-won jobs permanently, even against reviving competition which returning peace may bring.

A substitute may or may not resemble closely the material for which it is taking over. The important thing is that it shall do the same job at least as well, and if possible do it better.

It happens that one of the new flotation materials does closely resemble the

stuff it replaces. This is milkweed floss, subbing for kapok. Kapok is the downy floss that carries the seeds of the tropical tree of the same name. Some kapok trees grow in tropical America, but most of them are in the Japanese-occupied East Indies.

But we have no end of milkweed, growing wild over vast areas in this country. Until recently, it has never been cultivated, but it can easily be grown in fields if we want to. It is a perennial, but grows easily from seed, and then bears its fluffy crop year after year. Being a perennial, it has distinct value as a soil-holder, to combat erosion.

Most active in promoting the use of milkweed floss as a replacement for kapok is a Chicago physician, Dr. Boris Berkman, former director of the Pasteur Station in Moscow. He has been experimenting with possible products from milkweed for several years, so that when the emergency arose he was ready to do something about it.

Farmers were encouraged to grow

the plant, and about a million pounds of the floss, worth \$200,000, are being produced for the U. S. Navy from the pods of this once neglected weed.

One reason why milkweed did not come into its own any sooner was the high cost of separating the floss from the seed by hand. Dr. Berkman has designed machinery to loosen the seed and winnow the floss away with a current of air. This cuts the cost very materially.

Promising by-products from the new milkweed industry are fiber and cellulose from stalks and leaves, furfural from the pod shells, and oil and stock feed from the seed.

Bubbles have long captured the fancy of children (of all ages up to 95) by the way they float on top of the water.

They would make ideal fillers for lifebelts if they could only be made permanent.

That is just what chemists of the great du Pont firm have done. They have spun out continuous strings of bubbles made of light, transparent cellulose plastic, which have been given the trade name of *Bubblfil*. The material is now being manufactured at the du Pont's Tennessee plant.

Tests already made show that the

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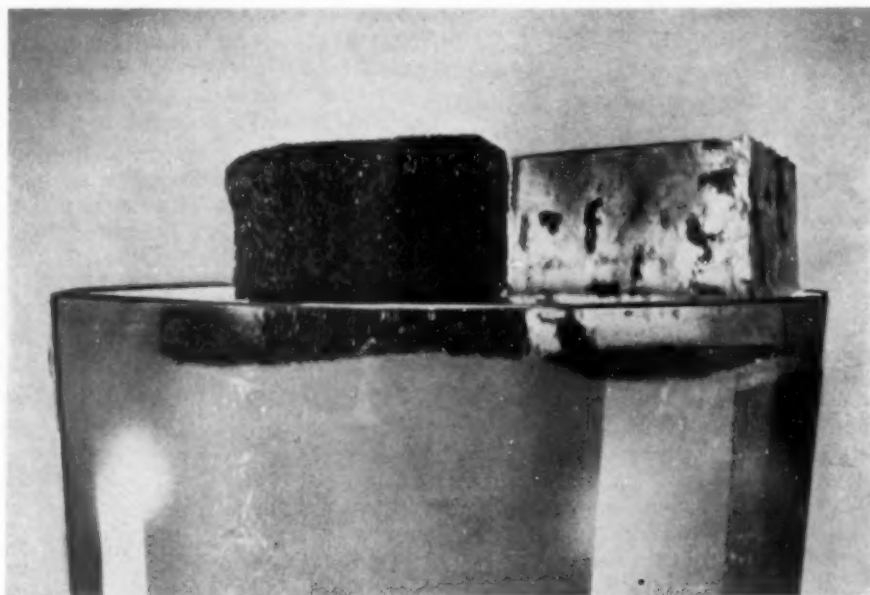
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BETTER—The chunk of glass filled with tiny bubbles (left), floats with even more buoyancy than war-scarce cork.

cellulose bubbles are fully as buoyant as kapok. The new product has been considered for life jackets of the type used in the Navy, for which kapok has been used in the past. Bubblfil has also been used in the air compartments of lifeboats and life rafts, and it is proposed for bridge pontoons. If these air compartments are punctured by bullets or shell fragments the tough, shining bubble masses will keep the craft afloat.

Bubblfil is an excellent example of a substitute surpassing the original material in at least some properties, for tests show that it loses buoyancy less rapidly than kapok upon prolonged immersion in water. That means that a life belt, or a pontoon that had been punctured, would stay afloat much longer before it began to become waterlogged and in danger of sinking.

The bubbles cannot be broken by squeezing, nor will they rupture at the extremely low pressures of high altitudes. In laboratory tests they remained intact when air pressure was reduced to that found at an altitude of over 50,000 feet. The transparent cellulose that forms the bubble walls is also quite stable at extreme temperatures. Heating above 200 degrees Fahrenheit for three days and chilling to 28 degrees below zero failed to break the bubbles.

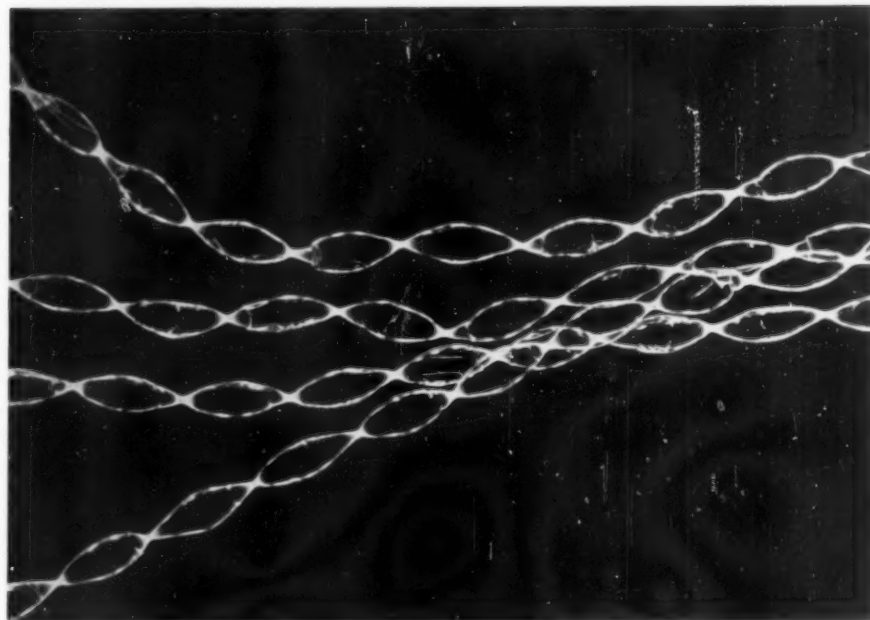
Floating Glass

Bubbles of another material give high flotation value to a third product, known commercially as Foamglas, which is manufactured by the Pittsburgh Corning Corporation.

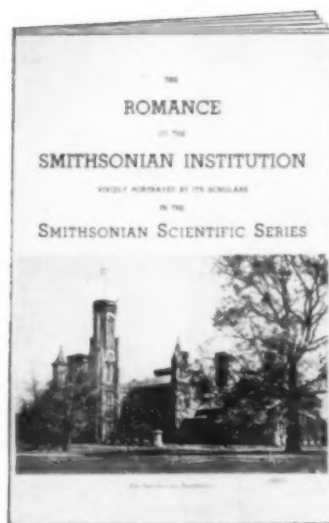
Foamglas is produced by firing ordinary glass which has been mixed with a small quantity of pure carbon. At the proper temperature the glass softens and the carbon turns into a gas, which then acts upon the molten glass very much as baking powder does in raising biscuits, filling it with a mass of tiny bubbles. The foamy mass is then allowed to cool, and in its final state it becomes a stiff but spongy black substance, exceedingly light, and of course capable of remaining afloat indefinitely because glass takes in no water at all and hence can never become water-logged.

Foamglas can be sawed, shaped and drilled with ordinary tools. If a block of it is hit with a bullet or other missile, the cells in the immediate path of destruction are of course wiped out, but the rest of the structure is unaffected.

Because of the large amounts of finely subdivided air which all three of these



LIFESAVER—Strings of buoyant bubbles made of cellulose plastic have been used in air compartments of lifeboats and life rafts, and proposed for bridge pontoons. Tough and stable at extremes of temperature, this substitute is better in some respects than the original buoyant materials which are now so difficult to obtain.



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Science News Letter, February 20, 1943

MEDICINE

Injury Factor Discovered Which Induces Inflammation

► **DISCOVERY** of a chemical, tentatively named necrosin, which induces the inflammation that occurs in various conditions, is announced by Dr. Valy Menkin, of Harvard Medical School (*Science*, Feb. 12).

Besides the redness and swelling which the layman recognizes as signs of inflammation, there are other disturbances of the body cells recognized by scientists. These inflammatory changes all follow the same pattern, regardless of what part of the body is inflamed or what injury or disease germ started the inflammation. Search for the underlying factor that causes the cell injury which results in inflammation led to discovery of necrosin.

Necrosin has not yet been chemically identified but is associated with a protein called euglobulin. Dr. Menkin found necrosin in exudates from dogs and man like, for example, the exudate in inflammations such as pleurisy.

Science News Letter, February 20, 1943

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WILDLIFE

Wildlife Ups Meat Supply

Former delicacies such as venison, wild duck and reindeer are now being used to take the place of scarce beef, pork and lamb.

► **VENISON**, wild duck, mountain trout: these and other gourmets' dainties in times of abundance have become items of straight-out nutrition now that meat rationing is upon us. How to make the most of our wild game and fish resources without endangering the necessary breeding stocks was discussed from all possible angles by leaders in wildlife research and administration at the eighth North American Wildlife Conference in Denver.

The war has brought many new problems to the men who watch over the mammals and birds of our woodlands and the fish of our streams and lakes. Hunters' ammunition supplies have been "frozen", new fishing tackle is not being made, many sportsmen are in the armed services or too busy in war work to go hunting and fishing, new populations have migrated into hitherto sparsely inhabited places in the West, game surpluses threaten to multiply to the mass starvation point if not shot down to normal levels—these are only a few of the headaches which the members of the Conference tried to alleviate in their discussions.

Science News Letter, February 20, 1943

Reindeer Steaks for Army

► **ONE BIG-GAME** surplus that turns out to be a piece of good fortune for the U. S. Army is the overpopulation of reindeer on Nunivak island, off the coast of Alaska. From fewer than 200 animals planted there shortly after the first World War, the herd on the island has increased to an estimated 19,000. The available browse will support only about 10,000, so the surplus must be killed off. The situation was described by Clifford C. Presnall of the U. S. Fish and Wildlife Service, who is in charge of wildlife on Indian lands.

The program calls for the killing of all buck fawns of the 1943 crop, Mr. Presnall told his audience; their hides will be used in making sleeping bags and mukluks (Eskimo type boots). Surplus adults will be killed, beginning next fall, until the herd is down to 10,000 head. Meat will be supplied to

the armed forces so far as required, and the rest will be made available for civilian use through regular market channels.

Science News Letter, February 20, 1943

Surplus Elk Goes to Indians

► **YELLOWSTONE PARK** has long had a problem in the increase of the two elk herds that pasture within its boundaries in summer and migrate down-valley in winter, stated Victor H. Cahalane, National Park Service naturalist. There is no hunting in any national park, so that the animals are protected as long as they stay inside. The surplus, therefore, can be kept down by hunting only when the elk migrate out in the winter.

Recent winters have been mild, and the elk have stayed within park boundaries most of the time. Add to this the severe damage their natural forage suffered during the droughts of the mid-1930's, and you have the makings of severe difficulties for the Park Service wildlife administrators.

During the present winter, cooperation of state and national agencies, favored by weather and other factors, has made possible a total reduction of 7,230 elk, nearly a tenth of which were killed within the park by rangers under official instruction. The meat was utilized by the Indians, and to some extent by Montana residents.

Science News Letter, February 20, 1943

Game Slaughter Opposed

► **PROPOSALS** to treat surplus game as meat animals, simply killing them en masse to get rid of surpluses, were opposed by Ross Leonard, director of the Utah Fish and Game Department. It is better, Mr. Leonard held, to permit the time-tried method of licensed and controlled hunting to reduce the size of the herd. Exceptions may occasionally be made, as where elk become locally too numerous and take to raiding ranchers' haystacks too persistently.

The speaker recognized factors that may operate against a normal hunting

take, such as shifts of population and restrictions on motor transportation. He felt, however, that the natural hunting instinct of most men will overcome such handicaps, and make game meat available in the accustomed way.

Science News Letter, February 20, 1943

Increasing Fish Supply

A number of the papers presented had to do with the improvement of conditions for fish and through that the increase of the freshwater fish supply. H. S. Swingle and E. V. Smith of the Alabama Agricultural Experiment Station told of their success in making bass, bream, crappie and other pondfish into what amounts to a field crop. They created a twelve-acre pond on some worn-out farmland, stocked it with fingerlings, put in fertilizer, and cultivated plants that would be an ultimate source of food for the fish. The finny

crop for 1941 was well over a ton; that for 1942 was more than a ton and a half.

Similar success with pondfish reared in Oklahoma was reported by A. D. Aldrich, superintendent of the Tulsa Municipal Fisheries. That city maintains a hatchery, from which a local body of water, Spavinaw lake, is annually planted with as many as half a million fingerlings. Operation is self-supporting, a small but sufficient revenue coming in from the sale of fishing and boating permits.

James W. Moffett of the U. S. Fish and Wildlife Service reported on the fish in Lake Mead, the artificially created inland sea backed up behind Boulder Dam. There is a large natural population of bass in the lake, which seem to be getting along very well without any man-made help, except for maintaining the lake level as constant as possible during the spawning season.

Science News Letter, February 20, 1943

GEOGRAPHY

Tunisia Tough on Troops

► AS THE TUNISIAN rainy season for early 1943 draws to a close, combat activities become possible in the semi-desert areas south and west of the seaport city, Sfax. The rainy season in this westernmost of French possessions in North Africa is roughly from October to April. The other months are hot and dry—usually with little or no rainfall.

Southern Tunisia has little rain at any season. It is a desert area. Northern Tunisia is mountainous except for a flat coastal rim. The United Nations' fighting forces are in the mountainous country, the Axis on the coastal rim. American forces are reported to be in the northern part of middle Tunisia, the area stretching northward from the semi-desert country along the great salt-depression called Chott el Djerid, the largest of the salt-water lakes or chotts of Tunisia.

In the mountainous area are farms, grazing ranches, and timbered areas with growths of marketable evergreen oaks, Aleppo pines and cork trees. The olive groves for which Tunisia is famed are on the coastal rim from Sfax, which is to the northeast of the Chott el Djerid, northward to Tunis.

Mountainous middle and northern Tunisia is not an easy country for troop movements. It is a land of mountains and plains but without plateaus. It is rough and badly eroded in some sections.

It is not supplied with good roads. Getting about in the rainy season is a mud-fighting job. But with new military roads constructed by the Army and with additional flying fields, the path is cleared to drive the enemy on the coastal plains into the Mediterranean.

It is a difficult country in which to obtain food and fighting equipment for an army. Considerable quantities of wheat and barley are produced, some of which are exported normally but not enough to be of much help in feeding the United Nations' troops. It produces many goats, considerable numbers of sheep, and some cattle. Goat meat is not included in the American army diet, and enough local mutton and beef cannot be purchased to meet the needs.

Supplies of all kinds must be transported over a long and difficult road. They are brought by ships to Casablanca, and from there by standard-gauge railroad to western Tunisia. Then they must be reloaded onto narrow-gauge cars or army trucks for transportation to middle Tunisia. They are carried by railroad and highway a distance equal to half the distance from Washington, D. C., to Los Angeles. Some supplies and equipment are unloaded from shipboard at Algiers. Transportation from there is over the same standard-gauge and narrow-gauge railroads.

Science News Letter, February 20, 1943

PHYSICS

Expansion of Technical Training Program Urged

► EXPANSION of the wartime college training of physicists and technicians to provide for the needs of war industries and research was pointed out as imperatively needed, by a joint meeting of the American Physical Society and the American Association of Physics Teachers.

At present, the training program is providing only the scientific personnel needed by the armed forces, and young physicists are even being called away from their laboratories by the draft. This is creating a dangerous vacuum in the research and testing forces on the home front, where exact scientific knowledge is needed even more than it is on the firing line.

Copies of a resolution calling for a well-rounded program, to provide trained personnel for all essential war agencies instead of just the Army and Navy, were forwarded to: Paul V. McNutt, chairman, War Manpower Commission; Henry L. Stimson, Secretary of War; Frank Knox, Secretary of the Navy; Donald M. Nelson, chairman, War Production Board; Dr. Vannevar Bush, director, office of Scientific Research and Development, and Dr. James B. Conant, chairman, National Defense Research Committee.

Science News Letter, February 20, 1943

BACTERIOLOGY

\$1,000 Bacteriology Prize For Research on CO₂

► THE \$1,000 prize and gold medal given annually by the Society of American Bacteriologists to an American bacteriologist under 36 years of age who has made an outstanding contribution to knowledge of the subject during the year was awarded to Dr. Harlan G. Wood, research assistant professor of bacteriology at Iowa State College.

Work tending to show that carbon dioxide acts as a vitamin-like substance necessary in the life of plants and animals won the award for Dr. Wood.

The award is presented at the annual meeting of the Society of American Bacteriologists, but as this was cancelled this year, the award was presented to Dr. Wood at a joint meeting at Iowa State College of local chapters of the Society and of Sigma Xi.

Science News Letter, February 20, 1943



A New Family Tree

► THE CITRUS FAMILY has had its pedigree revised and brought up to date by a veteran Department of Agriculture botanist, Dr. Walter T. Swingle. Results of his studies, which are expected to be of considerable use to breeders developing new hybrids and to orchardists seeking hardier stocks for grafting, will be published soon in monograph form by the University of California Press, as part of a series of major scientific publications in celebration of the seventy-fifth anniversary of the founding of the University of California. Dr. Swingle's monograph constitutes the first complete re-examination of the citrus family tree since 1824.

Under the new arrangement, the family consists of 33 genera, only one of which, the genus *Citrus* itself, is extensively cultivated for its wide variety of edible fruits. However, any one of the 32 other Cinderella sisters in the group might, if managed correctly, assist in producing valuable new hybrids, or

offer hardy roots on which present varieties of citrus fruits may be grafted. Furthermore, though these others do not at present produce edible fruits, some of them have good possibilities as ornamentals.

The citrus family has a curious geographic distribution. Its principal area stretches from Indomalaysia southeastward as far as Fiji. There are also a number of genera in Africa; none elsewhere in the Old World, and none at all native to the Western Hemisphere.

In working out the relationships of the many species in the family, Dr. Swingle made use of a radical new method of study. Ordinarily, a botanist studying pressed herbarium specimens examines the dried flowers whole, usually after picking one off and soaking it in water. This inevitably destroys a piece of the specimen; and often when there is only one specimen to be had, the herbarium curators are reluctant to let it go for this purpose.

Dr. Swingle, using a procedure pioneered in World War I days by a noted Swedish botanist at Uppsala, embedded single flowers or buds in paraffin and sliced them into transparently thin specimens for examination under the microscope. One specimen was thus multiplied into scores. The method also facilitated far more accurate and critical examination of anatomical details than was possible under the older procedure.

Since 1935, when he began his work on the reclassification of the citrus family, Dr. Swingle has accumulated more than a quarter-million such microscope-slide specimens, each keyed to connect it up with the original pressed plant on a herbarium sheet somewhere in one of the world's great museums or universities. The whole quarter-million can be packed in a box of only three cubic feet capacity—a matter of some importance if bombproof storage becomes necessary.

Science News Letter, February 20, 1943

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GENERAL SCIENCE

Award Honorable Mentions In Science Talent Search

► HONORABLE mentions to 187 boys and 73 girls in the Second Annual Science Talent Search have been announced by Science Clubs of America, bringing to 300 the high school seniors cited in this nation-wide selection of youth who have scientific ability.

The 260 awarded honorable mentions are located in 41 states and the

RADIO

Saturday, February 27, 1:30 p.m., EWT
"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

M. L. Wilson, Assistant Director in charge of Nutrition, Office of Defense Health and Welfare Service, will speak on "Nutrition in Wartime." This will be broadcast from the Science Talent Institute of the second Science Talent Search held in Washington.

District of Columbia. They were chosen from among some 15,000 entrants, 3,481 of whom completed the science aptitude examination, submitted recommendations and scholarship records and wrote essays.

Forty entrants had already been announced as winners of trips to a five-day Science Talent Search in Washington, where they will compete for \$11,000 in Westinghouse science scholarships.

All of those selected for honors will be recommended as students of unusual ability to scholarship-awarding colleges and universities.

As the result of the First Annual Talent Search conducted last year, many of those awarded honorable mention at that time received scholarship offers from colleges and universities.

The Science Talent Search is made possible financially by the Westinghouse Electric & Manufacturing Company and is conducted by Science Clubs of America, one of the activities of Science Service.

Interested persons may obtain the names of those who received honorable mention by writing to Science Service.

Science News Letter, February 20, 1943

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• New Machines and Gadgets

☼ **DRAIN STOPPERS** are now being molded of plastic instead of rubber. They are clean, light weight, available in all sizes.

Science News Letter, February 20, 1943

☼ **PLASTIC BUTTONS** made of melamine formaldehyde have been approved by the Army Quartermaster Corps for cotton garments issued to soldiers. These buttons have high resistance to laundering, decontamination and other severe treatment. This substitution for fresh water pearl and imported vegetable ivory saves money, labor and shipping space.

Science News Letter, February 20, 1943

☼ **A VERY SENSITIVE** device for measuring electrical radiation, the Geiger-Muller counter, has a new range of use by the development of a unit scarcely larger than a hypodermic needle. Tests show that it is very satisfactory and especially useful in locating and measuring narrow beams of radiation such as X-rays reflected from crystals.

Science News Letter, February 20, 1943

☼ **AN "ELECTRIC EAR"** weighing only two ounces is used to locate and measure "flutter" in an airplane. Flutter occurs when the vibrations of two different parts get together causing too great a vibration, or when the normal vibration in any part is overly increased due to high speed. Flutter has caused the collapse of many test planes.

Science News Letter, February 20, 1943

☼ **WOODEN MANHOLE** covers solve the problem posed by a WPB ban on the used of iron or steel in such items. A new cover, such as the one being inspected in the photograph, saves 500 pounds of metal. Thorough tests have demonstrated satisfactory strength and



durability. Pressure treatment with a preservative salts solution provides resistance to termites and rot.

Science News Letter, February 20, 1943

☼ **AIRCRAFT CRANKSHAFTS** and other machined parts requiring contour shaping are now being produced at a much accelerated speed by the use of a portable automatic machine tool control. With it standard shapers increase accuracy, speed production, and save manpower.

Science News Letter, February 20, 1943

☼ **A NEW FOOT CONTROL** for arc welders is strapped on the foot and is almost as light as a shoe. The welder can move around with it freely, unlike with the use of ordinary foot controls. Arc current is adjusted by pressing down

with the foot. This complete control improves quality of the weld and speeds up work, the manufacturer states. Because the foot control is so easily used, it will be an especial boon to women welders in aircraft plants.

Science News Letter, February 20, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 144.

PUBLIC HEALTH

Health Service Announces Fellowships for Educators

➤ **TWENTY** fellowships in health education, each carrying a stipend of \$100 monthly for 12 months plus tuition, and leading to a Master's Degree in Public Health at the University of North Carolina, are announced by the U. S. Public Health Service. Funds for the fellowships have been made available to the federal health service by the W. K. Kellogg Foundation.

The object is to train health educators to meet the present shortage of such personnel and an anticipated demand in the future in both this country and abroad. Placement after training is anticipated.

Applications should be sent to the Surgeon General, U. S. Public Health Service, Washington, D. C., by March 1. Courses begin March 20.

Science News Letter, February 20, 1943

Hemp to make Manila rope was successfully grown in the United States in 1942 and seed enough was produced to grow a considerable acreage this year.

ESSAYS ON THE NEW VORTEX ATOM

The purpose of these essays is to refute the assertions of physicists that the Rutherford-Bohr nuclear theory of atomic structure "is hardly more questionable than nearly everything that we accept as certain" (SCIENTIFIC MONTHLY, Aug. 1940, p. 193) and that our confidence in the nuclear theory "rivals our confidence that the planets revolve about the sun." (SCIENCE, Sept. 5, 1941, p. 222.)

Assertions like these would be more convincing if it were not for the anticlimax that nuclear enthusiasts are still utterly unable to draw a single plausible picture or diagram of even the simplest atomic particle, and are prudently refraining from any attack upon the new vortex theory. Their actions speak louder than their words!

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SCIENCE NEWS

First Glances at New Books

► **BY THEIR WORKS:** surely no more appropriate title could possibly have been chosen for a book on archaeology and cultural anthropology. It is a Buffalo Museum of Science book: written by H. Phelps Clawson, curator of anthropology, illustrated profusely with photographs of specimens in the Museum's rich collections, published by the *Buffalo Society of Natural Sciences*. It carries out in printed form the same scheme of presenting human cultures as phases in a grand continuity of development that is the basic scheme followed in the anthropological section of the Museum itself. (\$4).

Science News Letter, February 20, 1943

► **THE NUMEROUS OVAL,** swamp-filled depressions scattered over the Carolina coastal plain and known locally as "bays" have long been a baffling puzzle to geologists, who have been unable to agree on what causes produced them. One much-discussed hypothesis is that they were gouged out by fragments of an enormous meteorite that hit the earth probably in pleistocene time, like a vast charge of shrapnel. Prof. Douglas Johnson of Columbia University rejects this idea, and in **THE ORIGIN OF THE CAROLINA BAYS** (*Columbia Univ. Press*, \$4.50) argues in support of his own theory that the craters were formed by artesian springs, and subsequently modified into their present state by sedimentation and wind-and-wave action.

Science News Letter, February 20, 1943

► **DRAMATIC EPISODES** and a fast-moving style make **MIRACLES OF MILITARY MEDICINE**, by Albert Q. Maisel (*Duell, Sloan and Pearce*, \$2.75), an exciting book which will give the layman a happy picture of modern treatment of war wounds and disease.

Science News Letter, February 20, 1943

► **HOMEOWNERS** troubled by lack of repair men and supplies will welcome J. Harold Hawkin's **YOUR HOUSE** (*M. Barrows & Co., Inc.*, \$2.50). Well-illustrated and readable, it tells how to do the upkeep and repair jobs that continually pop up around the house.

Science News Letter, February 20, 1943

► **PRE-INDUCTION TRAINING** for the high school student is presented in **AUTOMOTIVE MECHANICS—I** by Clarence

G. Barger (*American Book Company*, \$1.12). Covering the first half of the War Department outline for this combat specialty, a second volume will soon be published to complete the course.

Science News Letter, February 20, 1943

► **WHAT CAN I DO?** The answer to this inquiry by the young people of today's America is set forth in **YOUTH**

GOES TO WAR, by Lyle M. Spencer and Robert K. Burns (*Science Research Associates*, \$1.28). A list of civilian services, and war jobs should be especially helpful for high school students and for their instructors. A bibliography for additional reading is included in the first school book of its type.

Science News Letter, February 20, 1943

Just Off the Press

AIR CONDITIONING ANALYSIS: With Psychrometric Charts & Tables—William Goolman—*Macmillan*, 455 p., illus., \$6.

ATLAS OF HUMAN ANATOMY: With Explanatory Text—Franz Frohse, Max Brodel and Leon Schlossberg — *Barnes & Noble*, 86 p., illus., \$1.50 paper, \$2.25 cloth. New edition.

AUTOMOTIVE MECHANICS—1: Training for Victory—Clarence G. Barger—*American Book Co.*, 166 p., illus., \$1.12.

BY THEIR WORKS: Illustrated from the Collections in the Buffalo Museum of Science—H. Phelps Clawson—*Buffalo Society of Natural Sciences*, 236 p., illus., \$4.

CONTRIBUTIONS TO A SPECIAL LIBRARY GLOSSARY: Linda H. Morley and others—*Special Libraries Association*, 17 p., 35c. "Definitions with amplifications and examples of special library terms in common use prepared by a group of special librarians for A.L.A. Committee on Library Terminology."

THE CYCLOPHORID OPERCULATE LAND MOLLUSKS OF AMERICA: Carlos De La Torre, Paul Bartsch and Joseph P. E. Morrison—*Gov't Print. Off.*, 306 p., 42 plates, 65c. (Smithsonian Institution United States National Museum Bulletin 181.)

ENGINEERING MECHANICS: Glen N. Cox—*Van Nostrand*, 301 p., illus., \$3. Textbook.

ESSENTIALS OF ALGEBRA: Complete Second Year Course—Walter W. Hart—*Heath*, 472 p., illus., \$1.68. Textbook.

FUNDAMENTALS OF ELECTRICITY: Lester R. Williard—*Ginn*, 351 p., illus., \$1.24. (Prepared at the request of the War Department and the United States Office of Education in conformance with official pre-induction training course outline No. PIT 101.)

FUNDAMENTALS OF ELECTRICITY: Training for Victory—Based on Material Developed for the Teaching of Learners and Apprentices of the Carnegie-Illinois Steel Corporation—*American Book Co.*, 194 p., illus., \$1.16. (Rewritten to Conform to the Pre-induction Training Course in Fundamentals of Electricity as Prepared by the War Department.)

FUNDAMENTALS OF MACHINES: Burton L. Cushing—*Ginn*, 436 p., illus., \$1.24. Pre-induction training book following U. S. Army outline for "Fundamentals of Machines—a Basic Course."

LEARNING TO NAVIGATE: P. V. H. Weems and William C. Eberle—*Pitman*, 135 p., illus., \$2. 2d edition. Handbook.

THE MUSCULATURE OF THE LABRUM, LABIUM, AND PHARYNGEAL REGION OF ADULT AND IMMATURE COLEOPTERA—Carl Kester Dorsey—*Smithsonian Institution*, 42 p., 24 plates, 30c. (Smithsonian Institution Miscellaneous Collections. Volume 103, Number 7.)

NOXIOUS GASES: And the Principles of Respiration Influencing Their Action—Yandell Henderson and Howard W. Haggard—*Reinhold*, 294 p., illus., \$3.50. 2d and revised edition.

PLASTIC CATALOG 1943: *Plastic Catalogue Corp.*, 864 p., illus., \$5.

POLYNESIANS, EXPLORERS OF THE PACIFIC—J. E. Weckler, Jr., *Smithsonian Institution*, 77 p., illus. Free upon direct application to the Smithsonian Institution. (Smithsonian Institution War Background Studies Number 6.)

PORTRAITS OF OUR PRESIDENTS: The Pach Collection—Alfred Pach—*Hastings House*, 68 p., illus., \$1.50. These portraits, presented for the first time in book form, are the ones that are considered the best likenesses.

RADIO—1: Training for Victory—R. E. Williams and Charles A. Scarlott—*American Book Co.*, 132 p., illus., \$1.04. (Written to Conform to the Pre-induction Training Course in Fundamentals of Radio as Prepared by the War Department.)

REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION AND FINANCIAL REPORT OF THE EXECUTIVE COMMITTEE OF THE BOARD OF REGENTS, 1942—*Smithsonian*, 112 p., illus., administrative pamphlet. Free. Correction.

SEMIMICRO QUALITATIVE ANALYSIS: A Brief Course—Arthur R. Middleton and John W. Willard—*Prentice-Hall*, 254 p., illus., \$3.75. Special edition for schools, \$2.75. Textbook.

THE TOTAL AND FREE ENERGIES OF FORMATION OF THE OXIDES OF THIRTY-TWO METALS: Maurice deKay Thompson—*The Electrochemical Society, Inc.*, 89 p., \$1. Corrected price.

YOUTH GOES TO WAR: Lyle M. Spencer and Robert K. Burns—*Science Research Associates*, 223 p., illus., \$1.28. For young people in grades 7 through 12 and for teachers and school administrators.